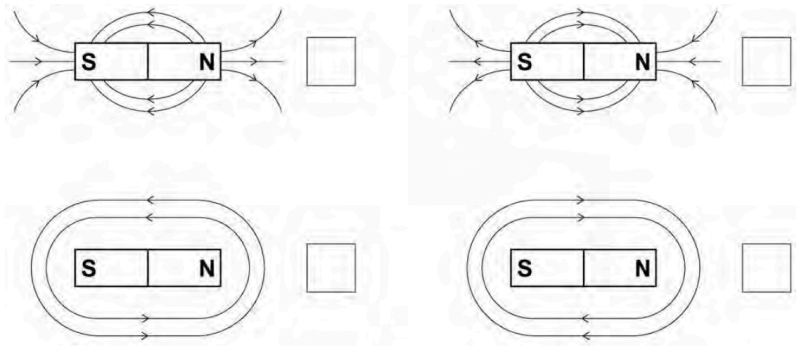
Q1. (2018)

0 8 A magnet produces a magnetic field.

0 8 . 1 Which diagram shows the magnetic field pattern around a bar magnet?

[1 mark]

Tick **one** box.



Q2. (2018)

0 8 . 2 **Figure 13** shows three metal blocks.

The blocks are not labelled.

One block is a permanent magnet, one is iron and one is aluminium.

Figure 13

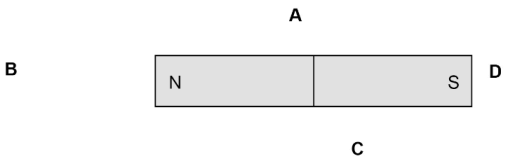
Describe how another permanent magnet can be used to identify the blocks.

[3 marks]

Q3. (2019)

0 1 . 2 **Figure 1** shows a bar magnet.

Figure 1



Which letter shows the position where the magnetic field around the bar magnet is strongest?

[1 mark]

Tick (✓) **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

Q4. (2019)

0 1 . 3 When two magnets are brought close to each other they exert a force on each other.

Describe how two bar magnets can be used to demonstrate a force of attraction and a force of repulsion.

[2 marks]

Force of attraction _____

_____

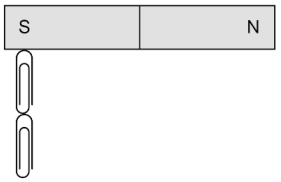
Force of repulsion _____

_____

Q5. (2019)

Figure 2 shows some paper clips that are attracted to a permanent magnet.

Figure 2



a)

0 1 . 4 The paperclips become magnetised when they are close to the permanent magnet.

What is the name of this type of magnetism?

[1 mark]

Tick (✓) **one** box.

Forced magnetism ☐

Induced magnetism ☐

Strong magnetism ☐

b)

0 1 . 5 Label the north and south poles of the two magnetised paper clips in **Figure 2**.

[2 marks]

Q6. (2020)

0 6 **Figure 9** shows five different metal samples.

Figure 9

0 6 . 1 A student placed a magnet close to each metal sample.

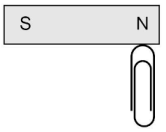
Describe what happened.

[2 marks]

Q7. (2020)

Figure 10 shows a paper clip being attracted to a permanent magnet.

Figure 10



0 6 . 2 The paper clip in **Figure 10** is not a permanent magnet.

Explain what would happen if the paper clip was removed and brought close to the south pole of the permanent magnet.

[2 marks]

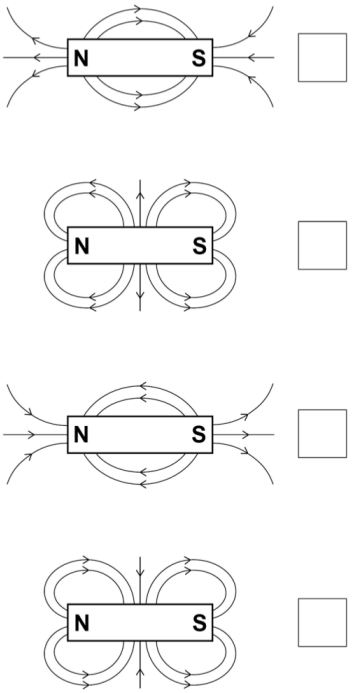
Q8. (2021)

0 2 Magnets attract some metals.

0 2 . 1 Which diagram shows the correct magnetic field pattern for a bar magnet?

[1 mark]

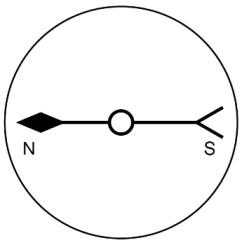
Tick (✓) **one** box.



Q9. (2022)

0 4 **Figure 5** shows a compass.

Figure 5



a)

0 4 . 1 Why does the compass always point in the same direction when it is **not** near a magnet?

[1 mark]

Tick (✓) **one** box.

- The compass is not magnetic. ☐
- The Earth has a magnetic field. ☐
- There is no force acting on the compass. ☐

b)

0 4 . 2 What material could the needle of the compass be made from?

[1 mark]

Tick (✓) **one** box.

- Aluminium ☐
- Copper ☐
- Plastic ☐
- Steel ☐

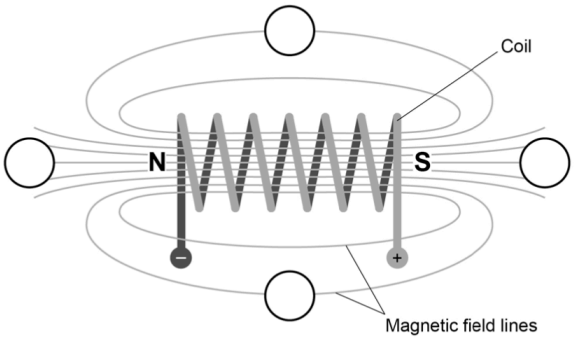
Q10. (2022)

Figure 6 shows a coil of wire.

There is a current in the coil.

The circles show the position of four compasses.

Figure 6



a)

0 4 . 3 Which statement describes the magnetic field around the coil?

[1 mark]

Tick (✓) **one** box.

- The field has the same strength at all points. ☐
- The field is stronger further away from the coil. ☐
- The field is strongest at the ends of the coil. ☐

b)

0 4 . 4 Draw **one** arrow in **each** circle on **Figure 6** to show the direction of the magnetic field at that point.

[2 marks]

c)

0 4 . 5 Give **two** ways the magnetic field around the coil could be made stronger.

[2 marks]

1 _____

_____

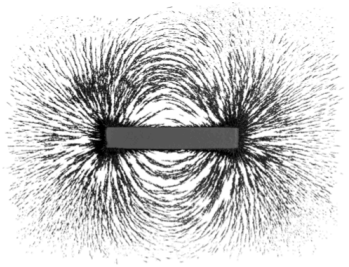
2 _____

_____

Q11. (2023)

0 3 **Figure 4** shows iron filings sprinkled around a bar magnet.

Figure 4



0 3 . 1 Why are the iron filings attracted to the bar magnet?

[1 mark]

Tick (✓) **one** box.

Iron is a metal. ☐

Iron is charged. ☐

Iron is heavy. ☐

Iron is magnetic. ☐

Q12. (2023)

0 3 . 2 **Figure 5** shows a bar magnet.

Draw magnetic field lines to show the magnetic field pattern around the bar magnet.

You should add arrows to the field lines to show the direction of the magnetic field.

[2 marks]

Figure 5

Q13. (2023)

0 3 . 3 **Figure 6** shows two bar magnets.

Figure 6

The magnets attract each other.

What conclusion can be made about the two poles marked **X** and **Y**?

[1 mark]

Tick (✓) **one** box.

They are both north poles. ☐

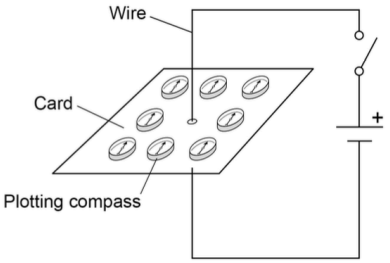
They are both south poles. ☐

They are opposite poles. ☐

Q14. (2023)

Figure 7 shows some plotting compasses around a wire. There is no current in the wire.

Figure 7



0 3 . 4 Why do the plotting compasses all point in the same direction?

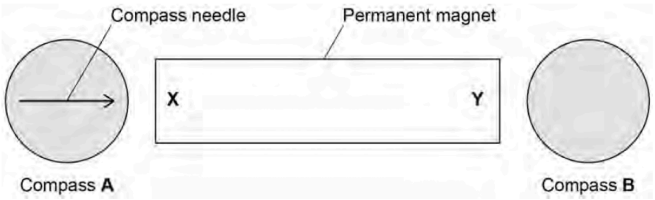
[1 mark]

Q15. (2024)

0 4 **Figure 8** shows a permanent magnet and two magnetic compasses.

The poles of the magnet are labelled **X** and **Y**.

Figure 8



a)

0 4 . 1 The direction of the compass needle in compass **A** is shown.

Give the names of the poles labelled **X** and **Y** in **Figure 8**.

[2 marks]

X _____

Y _____

b)

0 4 . 2 Draw an arrow on compass **B** in **Figure 8** to show the direction of the magnetic field at that position.

[1 mark]

Q16. (2024)

Figure 9 shows security tags on some clothes in a shop.

Security tags can be detected if clothes are taken out of the shop with tags still attached.

Figure 9

The tags are attached to the clothes by pins made from a magnetic material.

A shop assistant can use a magnet to remove the pins.

a)

0 4 . 3 Which of the following are magnetic materials?

[2 marks]

Tick (✓) **two** boxes.

- Aluminium ☐
- Copper ☐
- Iron ☐
- Lead ☐
- Nickel ☐
- Tin ☐

b)

0 4 . 4 Which of the following describes the force between a magnetic material and a magnet?

[1 mark]

Tick (✓) **one** box.

- The force is always attractive. ☐
- The force is always repulsive. ☐
- The force can be either attractive or repulsive. ☐

c)

0 4 . 5 The shop assistant removes a security tag and drops the tag into a collecting bin.

As it falls, the tag accelerates at 9.8 m/s^2.

The mass of the tag is 0.030 kg.

Calculate the resultant force acting on the tag.

Use the equation:

resultant force = mass × acceleration

[2 marks]